EENS Job Risk Assessment

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Name(s) of Risk Team Members: J. Boccio, P. Carr, C. Weilandics, N. Tutu, C. Krishna, L. Bowerman	**Point Value → Parameter ↓**	**1**	**2**	**3**	**4**	**5**
Job Title: Operation of a Laser in a laboratory **JRA #: EENS-JRA-006** **Rev. #: 2** **Date:** 5/27/08	**Frequency (B)**	**≤once/year**	**≤once/month**	**≤once/week**	**≤once/shift**	**>once/shift**
Job Description: This JRA evaluates general operation of Lasers at BNL laboratories. It covers use with Class IIIB, and Class IV lasers.	**Severity (C)**	**First Aid Only**	**Medical Treatment**	**Lost Time**	**Partial Disability**	**Death or Permanent Disability**
Training and Procedure List (Optional): Applicable Standing Operating Procedures **Approved by:** Linda Bowerman **Date:** 6/4/08	**Likelihood (D)**	**Extremely Unlikely**	**Unlikely**	**Possible**	**Probable**	**Multiple**

Stressors (if applicable, please list all):	**Reason for Revision (if applicable):**	**Comments**: PI qualifies & supervises users on critical components

			Before Additional Controls						**After Additional Controls**						
Job Step / Task	**Hazard**	**Control(s)**	**Stressors Y/N**	**# of People A**	**Frequency B**	**Severity C**	**Likelihood D**	**Risk* AxBxCxD**	**Control(s) Added to Reduce Risk**	**Stressors Y/N**	**# of People A**	**Frequency B**	**Severity C**	**Likelihood D**	**Risk* AxBxCxD**	**% Risk Reduction**
Installation of external optical elements	Injury from incorrect installation	Laser SOP, Laser Specific Training, TQ-Laser	N	1	2	2	2	8								
Alignment and adjustment of external optical elements using laser beam	Eye injury from laser exposure	Approved SOP, Laser power level, laser light frequency range, PPE, ESR, room/laser interlocks, Laser Specific Training Checklist, TQ_Laser, Tier 1 inspection, housekeeping, design of optical path, postings, Laser Tier I Inspections	N	1	2	4	2	16								
	Skin burn from laser exposure		N	1	2	2	3	12								
Using Class IIIB laser in experiments	Eye injury	Approved SOP, ESR, laser power level, laser class, laser light frequency range, PPE, room/laser interlocks, Laser Specific Training Checklist, TQ-Laser, Tier 1	N	1	4	4	1	16								
	Skin burn from laser exposure		N	1	4	2	1	8								
	Fire (focused beams)		N	1	4	2	1	8								

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			Before Additional Controls						After Additional Controls					
Job Step / Task	Hazard	Control(s)	Stressors Y/N	# of People A	Frequency B	Severity C	Likelihood D	Risk* AxBxCxD	Control(s) Added to Reduce Risk	Stressors Y/N	# of People A	Frequency B	Severity C	Likelihood D	Risk* AxBxCxD	% Risk Reduction
	Laser/Target Interaction	inspection, housekeeping, design of optical path, postings, beam stop, Laser Tier I Inspections	N	1	2	1	2	4								
	Interlock Failure		N	1	2	2	1	4								
Using Class IV laser in experiments	Eye injury	Laser power level, laser class, laser light frequency range, PPE, room/laser interlocks, approved SOP, ESR, Laser Specific Training Checklist, TQ-Laser, Tier 1 inspection, housekeeping, design of optical path, postings, beam stop, Laser Tier I Inspections	N	1	4	4	2	32								
	Skin Burns		N	1	4	2	2	16								
	Fire		N	1	4	2	2	16								
	Laser/Target Interaction		N	1	2	1	2	4								
	Interlock Failure		N	1	2	2	1	4								
Maintenance, service and repair	Eye injury	Laser power level, PPE, room/laser interlocks, approved SOP, training, Work Planning & Control documentation, PPE, interlock, housekeeping, LOTO, postings, NFPA 70E compliant, vendor qualified, user manual, beam stop	N	1	2	4	3	24								
	Skin burn		N	1	2	2	4	16								
	Fire due to laser igniting materials		N	1	2	2	2	8								
	Electrocution		N	2	2	5	2	40								
	Injury from chemical exposure (laser dye/carrier)		N	1	2	4	2	16								
Testing laser interlocks (Only if laser actually fires during testing).	Eye injury	Laser power level, laser class, laser light frequency range, Laser eyeware, approved SOP, work planning, Laser Specific Training Checklist, TQ-Laser, Tier 1 inspection, housekeeping, design of optical path, postings, beam stop; Laser Tier I Inspections	N	1	2	4	1	8								
	Skin burn		N	1	2	2	1	4								

Further Description of Controls Added to Reduce Risk:

*Risk:	0 to 20 Negligible	21 to 40 Acceptable	41 to 60 Moderate	61 to 80 Substantial	81 or greater Intolerable

Changes

Rev. 1 - (Review Team Members: P. Sullivan, P. Carr, R. Doty, L. Bowerman, B. Bowerman, J. Madaia, B. Brown, D. Elling)
Corrected typographical errors

Rev 2 - (Review Team Members - L. Bowerman, P. Carr, C. Weilandics, A. Bolotnikov) - Clarified tasks and controls; modified risk on Hazards 14 & 16